

Preliminary Amendment

Applicant: Winthrop D. Childers et al.

Serial No.: Unknown (Parent Ser. No. 09/975,295)

Filed: Herewith (Parent Filing Date October 10, 2001)

Docket No.: 10971935-17

Title: INK DELIVERY SYSTEM ADAPTER

IN THE SPECIFICATION

Please replace the paragraph beginning at page 1, line 7 with the following rewritten paragraph:

This application is a continuation of U.S. Patent Application Serial Number 09/975,295, attorney docket number 10971935-8, entitled "*Ink Delivery System Adapter*" filed October 10, 2001, which is a continuation-in-part of U.S. Patent Application Serial Number 09/034,874, attorney docket number 10971933-1, entitled "*Ink Delivery System Adapter*" filed March 4, 1998, now U.S. Patent 6,130,695, which is a continuation-in-part of U.S. Patent Application Serial Number 08/785,580, attorney docket number 10960726-1, entitled "*Apparatus Controlled by Data From Consumable Parts With Incorporated Memory Devices*" filed January 21, 1997, now U.S. Patent 5,812,156. This application is also a continuation-in-part of U.S. Patent Application Serial Number 08/871,566, attorney docket number 10970426-1, entitled "*Replaceable Ink Container Adapted to Form Reliable Fluid, Air, and Electrical Connection to a Printing System*" filed June 4, 1997, now U.S. Patent 6,074,042. Also, this application is related to commonly assigned U.S. Patent Application 09/034,875, attorney docket number 10971934-1, entitled "*Electrical Refurbishment for Ink Delivery System*", filed March 4, 1998, now U.S. Patent 6,227,638, and to U.S. Patent Application Serial Number 09/230,950, attorney docket number 10971936-1, entitled "*Ink Container Refurbishment System*" filed herewith.

Please replace the paragraph beginning at page 9, line 10, with the following rewritten paragraph:

Figures 3 and 4 depict an original equipment ink container 12 having an outer shell 24 which contains the fluid reservoir 22 (Fig. 1) for containing ink 19. Outer shell 24 has a leading cap 50 secured on a leading end and a trailing cap 52 ~~on~~ secured on a trailing end, relative to a direction of insertion for the ink container 12 into the printing system frame 38. Leading cap 50 has an aperture 44 on its leading end through which air inlet 28 and fluid outlet 30 from reservoir 22 (Fig. 1) protrude. Reservoir chassis 26 has an end or base which abuts leading cap 50 so that air inlet 28 and fluid outlet 30 protrude through aperture 44. Aperture 44 is surrounded by a wall 45, placing aperture 44 within a recess. Air inlet 28 and

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fluid outlet 30 are configured for connection to compressor 16 and printhead 14, respectively, (Fig. 1) once ink container 12 is properly inserted into the printing system frame 38. Air inlet 28 and fluid outlet 30 will be discussed in more detail subsequently.

Please replace the paragraph beginning at page 11, line 7, with the following rewritten paragraph:

Figure 5 depicts an enlarged view of electrical contact pads 54. An upstanding guide member 72 is mounted to chassis 26 adjacent contact pads 54. Electrical contact pads 54 include two pairs of contact pads 78, each pair being electrically connected to one of the volume sensing circuits 36, discussed with respect to Figure 1. The four contact pads 80 spaced between each pair of pads 78 are electrically connected to the information storage device 34. Each pair of volume sensing contact pads 78 is located on an outer side of the row of contact pads 54. Contact pads 78 are part of a flexible circuit 82 (Fig. 13) which is mounted to the ~~base 56~~ chassis 26 by fasteners 84. The four intermediate contacts 80 located between the pairs of volume sensing contacts 78 are metal conductive layers disposed on a nonconductive substrate 86 such as epoxy and fiberglass. Memory device 34 is also mounted on substrate 86 and is connected by conductive traces (not shown) formed in substrate 86. Memory device 34 is shown encapsulated by a protective coating such as epoxy. A backside of substrate 86, opposite contacts 80, is bonded by adhesive or attached to the chassis 26 by fasteners 84.

Please replace the paragraph beginning at page 14, line 12, with the following rewritten paragraph:

Referring to Figures 9 and 10A, fluid inlet 98 and air outlet 96 protrude from floating platform 102. Fluid inlet 98 includes an ink supply sleeve 110 surrounding a hollow needle 108. Needle 108 has a port near its distal end. A collar 111 sealingly and slidingly engages needle 108. A spring 113 urges collar 111 toward the distal end, blocking the port. Air outlet 96 includes an air supply sleeve ~~that surrounds~~ 114 that surrounds a hollow needle 112.

Please replace the paragraph beginning at page 24, line 15, with the following rewritten paragraph:

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A flexible ink reservoir 167 located within a rigid shell 169 is located inside housing 163. An fluid outlet 171 extending from reservoir 167 engages fluid inlet 98 and receives hollow needle 108 therein in a manner similar to that of fluid outlet 30 discussed with respect to ink container 12. In a preferred embodiment, a check valve 172 is located between reservoir 167 and fluid outlet 171 and is opened by needle 108 when the needle pierces a seal or septum 170 in fluid outlet 171. Shell 169 has an air inlet 173 with a septum 174 which connects to air outlet 96 and is pierced by the hollow needle 112 therein for delivering pressurized air from air outlet 96 to the pressure chamber in shell 169 for pressurizing reservoir 167. Fluid outlet 171 and air inlet 173 protrude through opening 165 in housing 163. Preferably, a volume sensing circuit comprising inductive coils is also used similar to that shown in Figure 13.

Please replace the paragraph beginning at page 26, line 1, with the following rewritten paragraph:

Ink supply circuitry 175 also has the signal source 181 which may be an electrical memory device or an emulator for supplying enabling information to printing system 10. In an exemplary embodiment, signal source 181 is mounted to one side of housing 163. Housing 163 preferably has keying and guiding features 182 184 for functioning in a similar manner to items 58 and 60 (Fig. 3).

Please replace the paragraph beginning at page 28, line 6, with the following rewritten paragraph:

In a preferred embodiment, housing 193 also includes keying and aligning features 198 that are preferably similar to the keying and aligning features 58 and 60 discussed with respect to Fig. 3. When housing 193 is releasably inserted into receptacle 88, the keying and aligning features 198 provide coarse alignment between housing 193 and receptacle 88. This allows fluid outlet 195 to properly engage sleeve 110 associated with fluid inlet 98 to allow needle 108 to properly align to and be received by fluid outlet 195. The fluidic connection between needle 108 and ~~inlet~~ fluid outlet 195 provides an intermediate level of alignment accuracy between connector 100 and pads 200. An alignment member such as upstanding member 72 is then used to provide fine alignment between pads 200 and contacts 104. This

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coarse, intermediate, and fine alignment scheme is similar to that discussed for ink container 12 with respect to Figs. 10A and 10B.

Please replace the paragraph beginning at page 29, line 1, with the following rewritten paragraph:

When ink supply 191 is releasably installed into receptacle 88 such that fluid and electrical connections are established between ink supply 191 and printing system 10, springs 101 are compressed. Springs 101 exert a force on ink supply 191 that is directed opposite to the direction of installation. If necessary, ink supply 191 includes at least one latching feature ~~198~~ 196 to overcome this force, as discussed earlier.

Please replace the paragraph beginning at page 29, line 6, with the following rewritten paragraph:

Figure 18 depicts a fourth embodiment of the invention. Ink supply 201 has an ink reservoir 203 with a fluid outlet 205 protruding from one end. Volume sensing circuitry such as coils 36 (Fig. 13) can also be employed on reservoir 203. An electrical ink supply circuit 207 is employed which may be the similar to ink supply circuit 147 of ink supply 141 as described with respect to Figure 15. Ink supply circuit 207 has an electrical connector ~~209~~ 204 which connects to a signal source 211. In operation, ink is metered from reservoir 203 as signal source 211 electronically exchanges information with controller 32 of printing system 10 (Fig. 1). Electrical continuity may be checked as described in connection with Figure 15. Electrical signal source 211 may be similar to memory device 34 or it may be an emulator that is functionally equivalent to the memory device 34.

Please replace the paragraph beginning at page 30, line 14, with the following rewritten paragraph:

Figure 20 depicts an ink supply 224 that uses a rigid ink reservoir 226. Reservoir 226 has a fluid outlet 228 that is configured similar to the fluid outlets previously described for fluidic connection to fluid inlet 98 (Fig. 19). An ink conduit 230 extends into reservoir 226 and terminates at the bottom with a filter 232. Filter 232 is preferably of a type that will allow the passage of ink into ink tube 230, but block air flow into tube 230. An air inlet 234

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is located next to fluid outlet 228 for reception into air outlet 96 (Fig. 19). Air inlet 234 is connected to an air tube 238 that extends into an upper side of reservoir 226. A memory or emulator unit and electrical contact pads 242 are located on a leading edge of reservoir 226. Contact pads 242 are positioned to engage printer electrical connector 100 (Fig. 19). A guide member (not shown) such as guide member 72 (Fig. 5) will be employed.

Please replace the paragraph beginning at page 31, line 3, with the following rewritten paragraph:

In a preferred embodiment, ink supply 224 includes latch feature-~~246~~ 244 for engaging latch portion 94 associated with printing system 10. This latch feature would be similar to and function similarly to the latch feature 62 described with respect to Figs. 3-10.

Please replace the paragraph beginning at page 31, line 7, with the following rewritten paragraph:

In a preferred embodiment, ink supply 224 includes keying and aligning features-~~244~~ 246 that would be similar to and function similarly to the keying and aligning features 58 and 60 discussed with respect to Figs. 3-10.